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Office Memorandum • UNITED STATES GOVERNMENT

TO : The Files

DATE: 31 January 1958

FROM :

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SUBJECT: Trip Report - Contract RD-76, T.O. F, with

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1. The writer, accompanied by [redacted] of SPD/EAB, visited [redacted] on 23 January 1958, to monitor progress under the subject contract. The development status of the miniature data recorder was discussed at a meeting with the following company representatives:

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2. Prior to a general discussion of the project with the people listed above, [redacted] brought [redacted] into a meeting to discuss the Type E-100, Electro-Mechanical 1000 cycle resonator developed by [redacted]. This resonator was intended for use as the reference oscillator built into the miniature recorder. An unclassified copy of a report on the test and evaluation of the resonator written by the R+D Laboratory was shown. This report pointed out that the accuracy of the resonator did not meet the recorder specification which called for stability of plus or minus one part in 50,000. Since there was no agreement that the production copies of this item would have the desired accuracy, [redacted] was asked about alternate oscillator designs. He mentioned that he was considering a crystal controlled oscillator employing frequency division to obtain the 1000 cycle tone. This is the same approach taken by [redacted] which, as yet, has not proved temperature stable. [redacted] was informed that we were seriously considering a relaxation of the specification to plus or minus one part in 10,000. This change was in accordance with earlier discussions on the subject, and SPD acceptance per memo SPM 8-514 dated 21 January 1958.

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3. The [] representatives are apparently devoting considerable time toward convincing themselves that pulse shape cannot be accurately retained on magnetic tape at the low tape speeds being used. [] offered that since there were two data channels available, one might be used to record pulse width and the other to record pulse amplitude. He described a "Schmidt" trigger circuit that would supply constant amplitude pulses at the true pulse widths. He was informed that we were aware of this possibility and that we would incorporate this circuitry ahead of the recorder, if so desired. [] contributed toward an understanding of the frequency response problem by explaining that although the bandwidth of the recording mechanism was limited to 10 kc, the amplifier bandwidth should, and will represent the state of the art of transistors circuitry, since any limitation to pulse shape occurring in the amplifier would contribute to play-back distortion. He also noted a phenomenon working in our favor which suggests that although our recorder will be limited to 10 kc sinusoidal response, experience shows that square waves are actually reproduced containing higher harmonic detail than would seem mathematically possible.

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4. In view of the rapidly approaching completion date for the engineering model (28 June 1958), the writer asked if the contractor had a scheduled outline for completion of the various phases of the development. Since there was none on paper, the writer suggested that such an outline might guide the sub-contractor, the several people working on different sub-assemblies at [] and the writer in making decisions on acceptability of a given design or circuit. [] will prepare such an outline and forward a copy to all interested individuals. [] were asked to write more comprehensive reports on this and the [] project. [] mentioned that there seemed to be a change in our attitude toward these tasks but agreed that both the scheduling and the more detailed reports were healthy suggestions.

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5. The writer examined an engineering model of a tape cartridge and transport built for the project which reflected good design and workmanship. The final tape cartridge configuration will not be settled until investigation of a third system has been completed. Parts are being fabricated for an experimental tape cartridge which will eliminate the need for reels as the inside surfaces of the cartridge will guide the tape.

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